UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,421	02/18/2004	Colleen Legzdins	2269.029US1	3051

21186 7590 08/18/2008

SCHWEGMAN, LUNDBERG & WOESSNER, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER	
TALBOT, BRIAN K	
ART UNIT	**PAPER NUMBER**
1792	
MAIL DATE	**DELIVERY MODE**
08/18/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/781,421	LEGZDINS ET AL.	
	Examiner	Art Unit	
	Brian K. Talbot	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/16/06(RCE)*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19,22-24 and 27-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19,22-24 and 27-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/16/08 has been entered.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knights et al. (2004/0157110) in combination El-Sayed (6,090,858) in combination with Womelsdorf

(2002/0149002) in combination with Asakawa et al (2003/0222048) further in combination with Amine et al. (5,820,790).

Knights et al. (2004/0157110) teaches a supported catalyst for the anode of a voltage reversal tolerant fuel cell. The solid polymer fuels cell series can result in voltage reversals. In order to pass current, reactions other than fuel oxidation may take place at the anode (abstract). Electrodes for MEA can be prepared by first applying a sublayer if desired to a suitable substrate and then applying the catalyst layer onto the sublayer. These layers can be applied in the form of slurries or inks which contain particulates and dissolved solids mixed in a suitable liquid carrier. The liquid carrier is evaporated off to leave a layer of particulates and dispersed solids ([0011]). The fuel cell can be connected to a load (([0012]). Knights et al. (2004/0157110) teaches the coating is applied to a porous substrate and that the coating enters micropores of greater than 100 nanometers (.1 microns).

Knights et al. (2004/0157110) fails to teach the particular claimed nano-particle dispersion.

El-Sayed (6,090,858) discloses a method for the synthesis of colloidal metal nanoparticles where in ratio of concentration of a capping material to that of the metal ions in a solvent is manipulated to produce the desired nanoparticles (column 1, lines 66-67; column 2, lines 1-4). Degree of polymerization and concentration of the stabilizing polymer i.e. capping material used to produce colloidal particles influence the size distribution, stability of these colloidal particles. For example, higher ratio of capping material to metal component produces smaller gold particles (column 1, lines 47-53). The ratio of capping material to metal ions is 1:1,2.5:1 and 5:1 (column 3, lines 17-20) and reads on the ratio of charged soluble polymer to

metal component of claim 1. In the preferred embodiment, water is added to make 8"10^5 M solution of the K2PtCl4 salt. To this is added 0.1 M sodium polyacrylate as the capping material (column 3, lines 41-51) and read on weight percentages of charged soluble polymer and metal component of claim 1. The concentration of K_2PtCl_4 and sodium polyacrylate solutions is low and reads on a large weight percentage of carrier such as water of claim 1. The synthesis of colloidal particles includes providing a solution of K_2PtCl_4 in water by maintaining the vessel temperature at 25°C to which is added 0.1 M solution of sodium polyacrylate (abstract) and reads on the room temperature of claim 13. The average size of these nanoparticles range from 0.5 to 18 nm (column 5, lines 1-5). The nanoparticles are prepared by the standard method whereby a solution of a metal salt and water is prepared in a reaction vessel to which a capping material such as sodium polyacrylate, sodium monoacrylate is added (column 2, lines 8-12). The sodium polyacrylate reads on 100% substitution of the claim 1.

El-Sayed (6,090,858) fails to teach or is silent with respect to molecular weight of the polymer being less than 25,000 amu.

Womelsdorf (2002/0149002) teaches an aqueous dispersion of Zn oxide nanoparticles consisting of a stabilizer such as sodium polyacrylate which has a mean molecular weight of 5100 (paragraph 0022) and reads on the molecular weight of charged soluble polymer of claims 1 and 3.

Therefore, it would have been obvious to one skilled in the art at the time invention was made to use sodium polyacrylate with a mean molecular weight of 5100 in the colloidal nanoparticle dispersion of El-Sayed (6,090,858) with the expectation of achieving similar

success and to have utilized the nanoparticle dispersion as a catalyst and/or electrode dispersion in Knights et al. (2004/0157110) process.

Knights et al. (2004/0157110) in combination El-Sayed (6,090,858) in combination with Womelsdorf (2002/0149002) fail to recite forming features on the substrate on which the electrode is formed.

Asakawa et al (2003/0222048) discloses coating a micro-structured object having features formed thereon, wherein each of the features have a dimension of between 50 nm and 200 microns (para 0001).

It would have been obvious to one with ordinary skill in the art to include coating a micro-structured object having features formed thereon, wherein each of the features have a dimension of between 50 nm and 200 microns because Asakawa et al (2003/0222048) teaches need in the electronics art for micro-structured objects (para 0002).

Knights et al. (2004/0157110) in combination El-Sayed (6,090,858) in combination with Womelsdorf (2002/0149002) in combination with Asakawa et al (2003/0222048) fail to teach an organic solvent having a surface tension less than water as the carrier of the dispersion.

Amine et al. (5,820,790) teaches an electrode paste whereby an organic solvent is utilized as the dispersion medium such as ethyl alcohol which results in coating ease as well as eliminating the binder normally utilized in such preparation for forming and electrode (col. 8, lines 35-50).

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Knights et al. (2004/0157110) in combination El-Sayed (6,090,858)

in combination with Womelsdorf (2002/0149002) in combination with Asakawa et al (2003/0222048) process by utilizing an organic solvent such as ethyl alcohol (ethanol) with the advantage of ease of coating and elimination binders as detailed by Amine et al. (5,820,790).

Claims 22-24 and 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knights et al. (2004/0157110) in combination El-Sayed (6,090,858) in combination with Womelsdorf (2002/0149002) in combination with Asakawa et al (2003/0222048) further in combination with Amine et al. (5,820,790) still further in combination with Biebuyck et al. (6,326,058).

Features detailed above concerning Knights et al. (2004/0157110) in combination El-Sayed (6,090,858) in combination with Womelsdorf (2002/0149002) in combination with Asakawa et al (2003/0222048) further in combination with Amine et al. (5,820,790) are incorporated here.

Knights et al. (2004/0157110) in combination El-Sayed (6,090,858) in combination with Womelsdorf (2002/0149002) in combination with Asakawa et al (2003/0222048) further in combination with fail to teach rendering the external surface of the microstructure to be hydrophobic.

Biebuyck et al. (6,326,058) teaches a device for patterning a substrate with patterning cavities. Biebuyck et al. (6,326,058) teaches when filling conduits with liquid material it is necessary to make the walls hydrophilic and the outer/exterior surfaces hydrophobic so as to make it energy favorable for the fluid to remain in the desired micro-channels or chambers.

Therefore it would have been obvious for one skilled in the art at the time the invention was made to have modified Knights et al. (2004/0157110) in combination El-Sayed (6,090,858) in combination with Womelsdorf (2002/0149002) in combination with Asakawa et al (2003/0222048) further in combination Amine et al. (5,820,790) by treating the exterior of the holes to be hydrophobic so as to assure the coating fills the holes as evidenced by Biebuyck et al. (6,326,058) with the advantage of concentrating the coating material and avoiding a subsequent removing step which would be required.

Response to Amendment

5. Applicant's arguments filed 6/16/08 have been fully considered but they are not persuasive.

Applicant argued that the prior art fails to teach an organic liquid carrier having a surface tension less than water.

Amine et al. (5,820,790) teaches this limitation as detailed above.

Applicant argued that the prior art fails to teach preparing a substrate to have wettable and non-wettable surfaces.

The Examiner disagrees. As detailed above, Biebuyck et al. (6,326,058) teaches a device for patterning a substrate with patterning cavities wherein filling conduits with liquid material it is necessary to make the walls hydrophilic and the outer/exterior surfaces hydrophobic so as to

make it energy favorable for the fluid to remain in the desired micro-channels or chambers. The making of hydrophilic and hydrophobic areas constitutes wettable and non-wettable areas.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K. Talbot whose telephone number is (571) 272-1428. The examiner can normally be reached on Monday-Friday 8AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

//Brian K Talbot//
Primary Examiner, Art Unit 1792

BKT